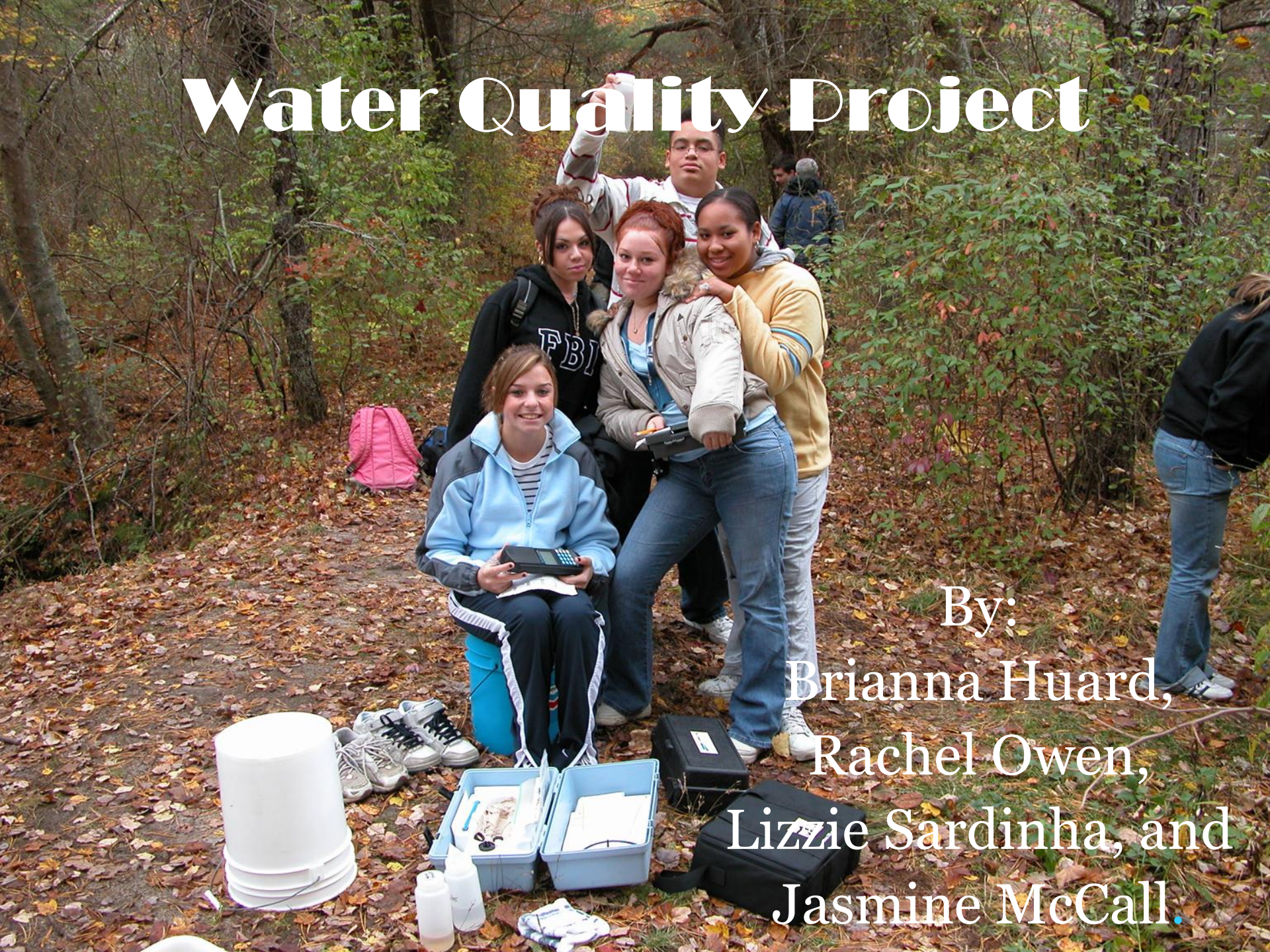
2006

Water Quality Project: Mashpee River Study

Water Quality Project



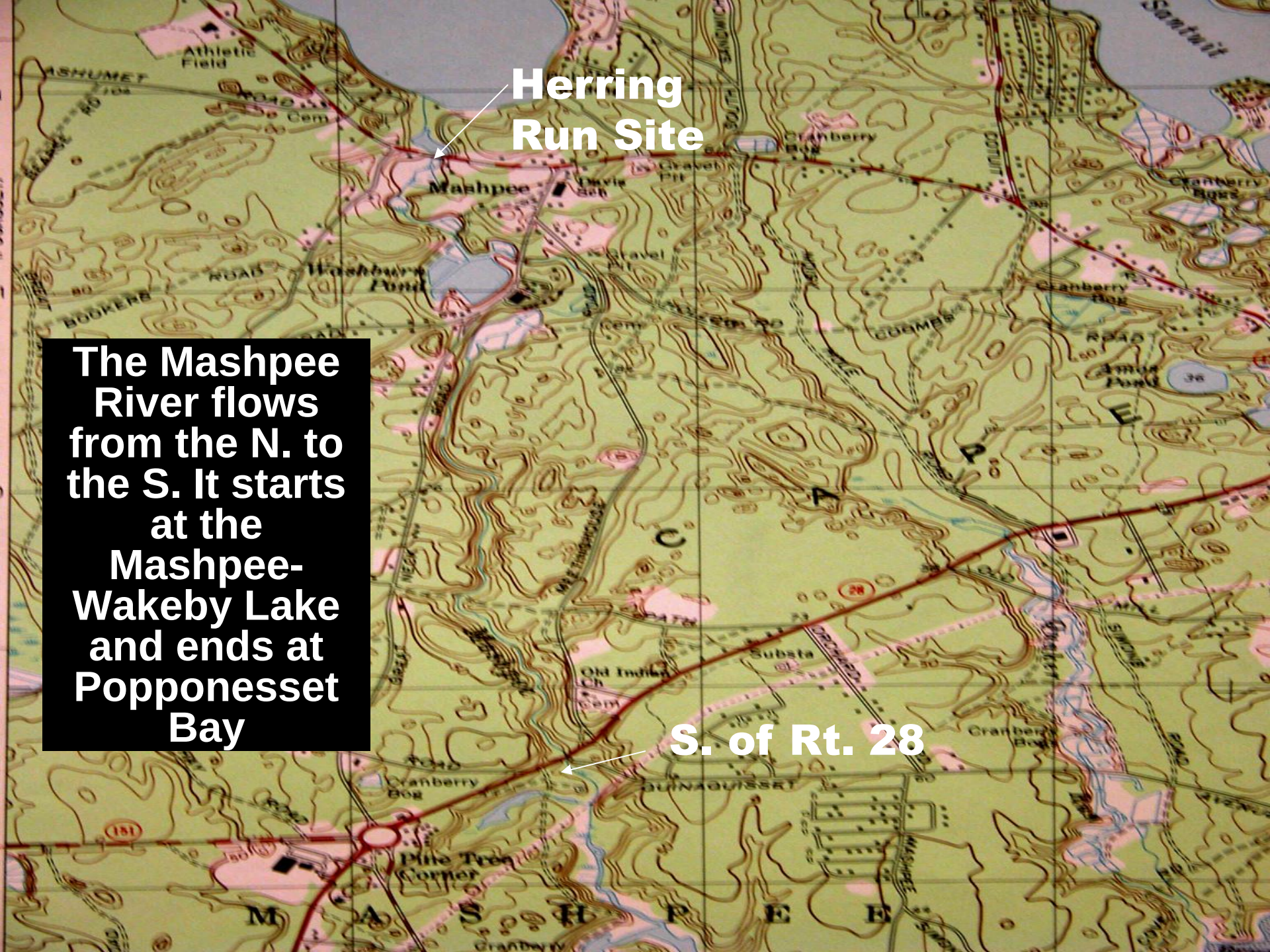
By:
Brianna Huard,
Rachel Owen,
Lizzie Sardinha, and
Jasmine McCall.

Where Were We?

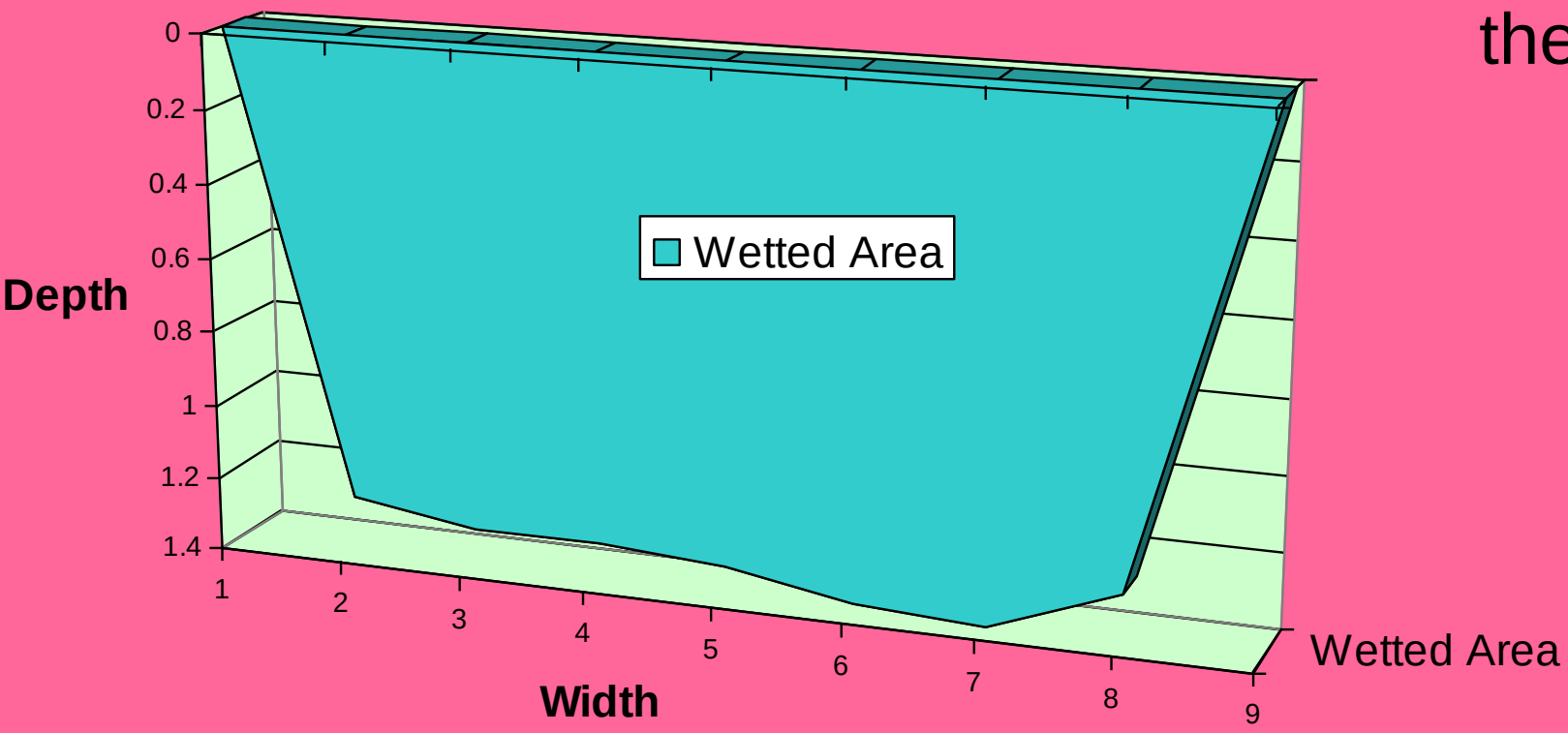
Both sites were along the Mashpee River.

The first site we tested was the locally known, Herring Run. It is at the head of the river.

The second site was South of Rt. 28. It was downstream of an ancient road.


Herring Run Site
The Mashpee River flows from the N. to the S. It starts at the Mashpee-Wakeby Lake and ends at Popponesset Bay
S. of Rt. 28
Mashpee
Athletic Field
Cranberry Bog
Old Indian Ch
Cem
Pine Tree Corner
MASHPEE


Herring Run
Habitat here includes a concrete fish ladder, gravel, and sand substrate and no forest overstory.



This is the width and depth of the Herring Run

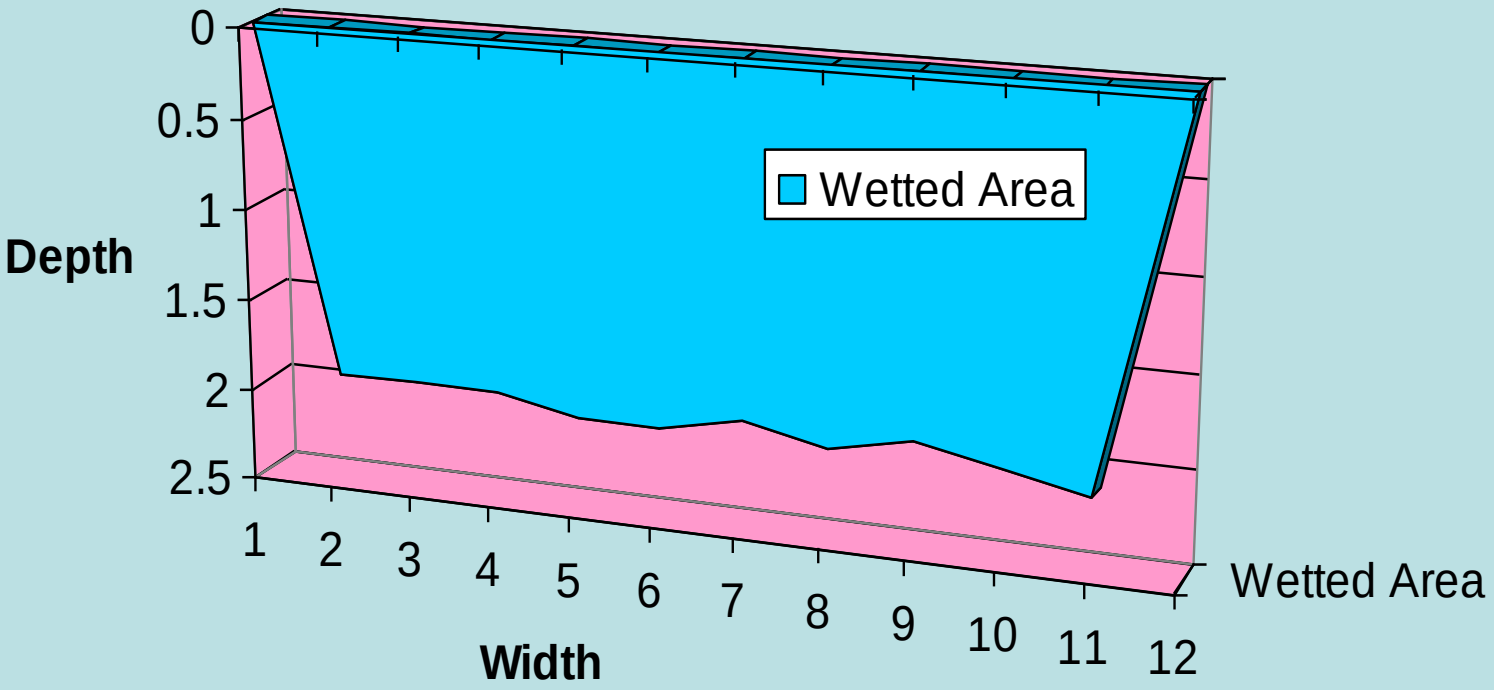
The average depth is 1.3 feet.

South of Rt. 28

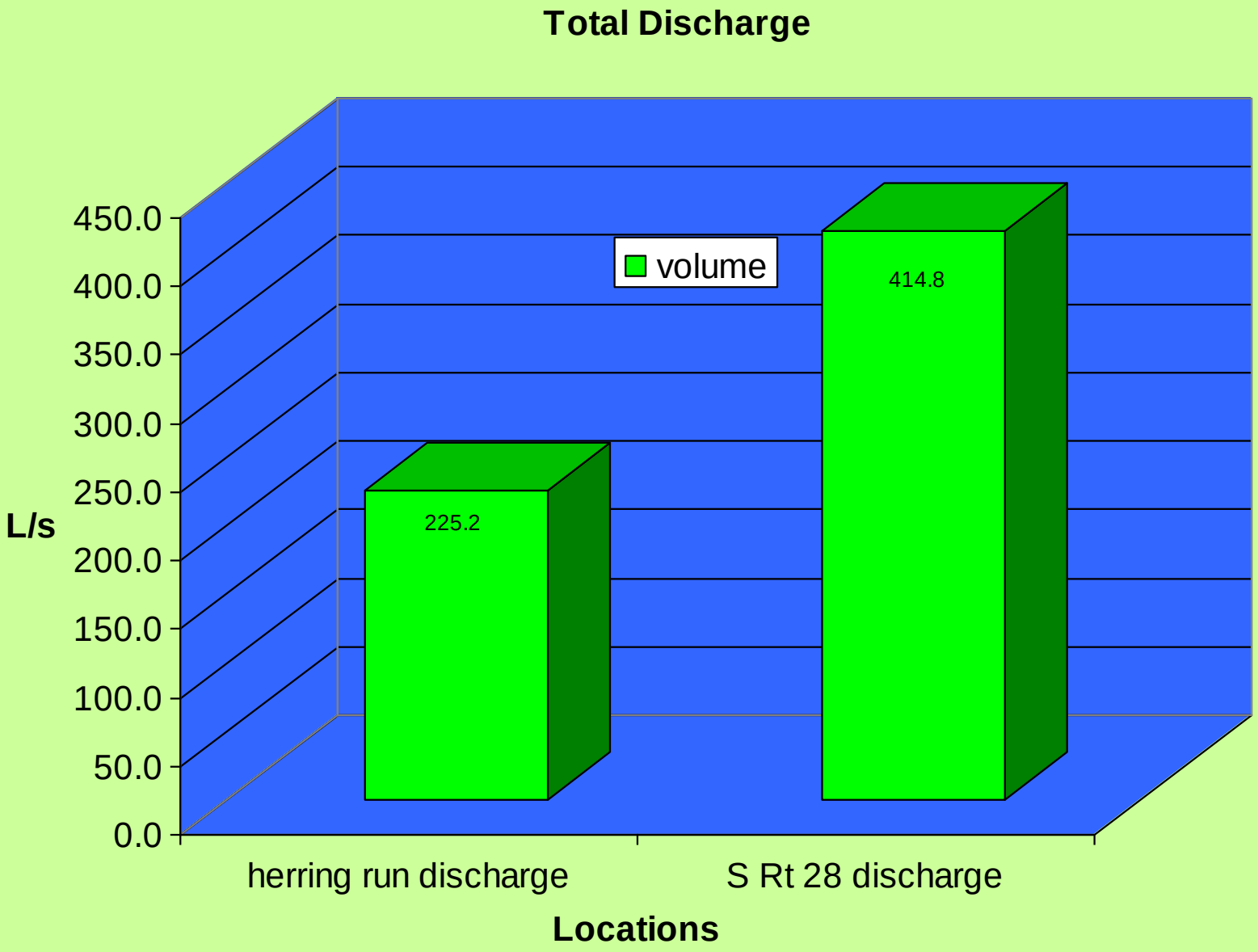
Habitat here includes an old concrete bridge, gravel, sand, and mud substrate and a complete forest overstory.

Profile at S. Rt.28

This is the width and depth of our site: South of Rt. 28



The average depth is 1.96 feet



There is more discharge at Rt. 28., it's lower in the river system. It carries almost twice the volume of the upper site.

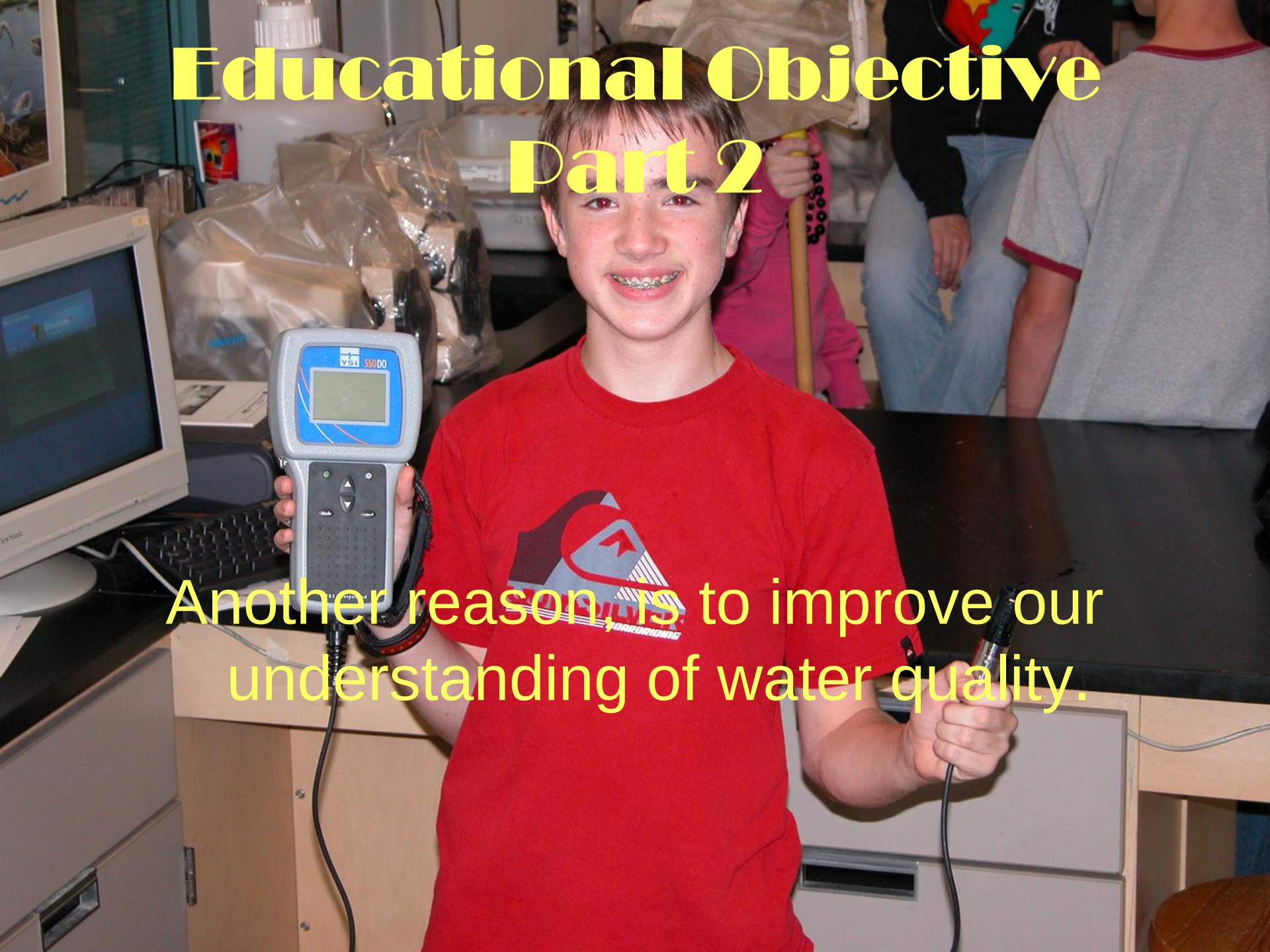
Sampling for Water Quality Field

- Boots
- Long gloves
- Tweezers
- Buckets
- Stadia Rod
- Flow meter
- PH meter
- Clipboards
- Fine Mesh Net
- YSI Dissolved Oxygen Meter
- HACH Colorimeter
- 100 ft. tape measure

Educational Objective

We tested the sites to have a better understanding of ecological relationships.

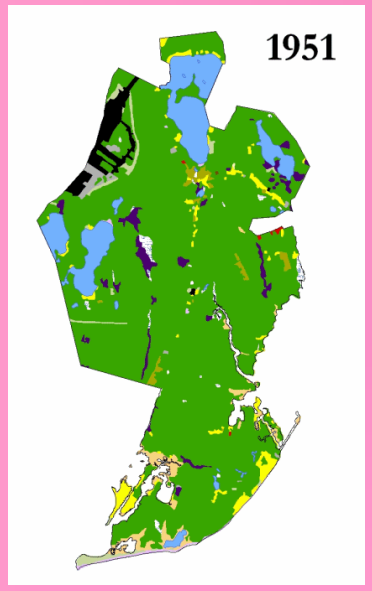
Educational Objective Part 2

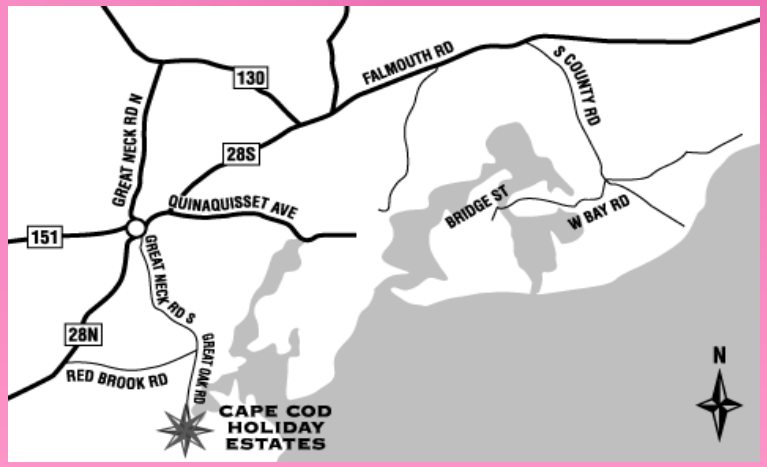


Another reason is to improve our understanding of water quality.

Environmental Objectives

To collect relevant water quality data in order to assist our town.





Our town has experienced rapid growth over the past 55 years.

Environmental Objectives Part 2

Another reason is to identify potential threats, hazards, or stressors to our water.

Our Water Chemistry

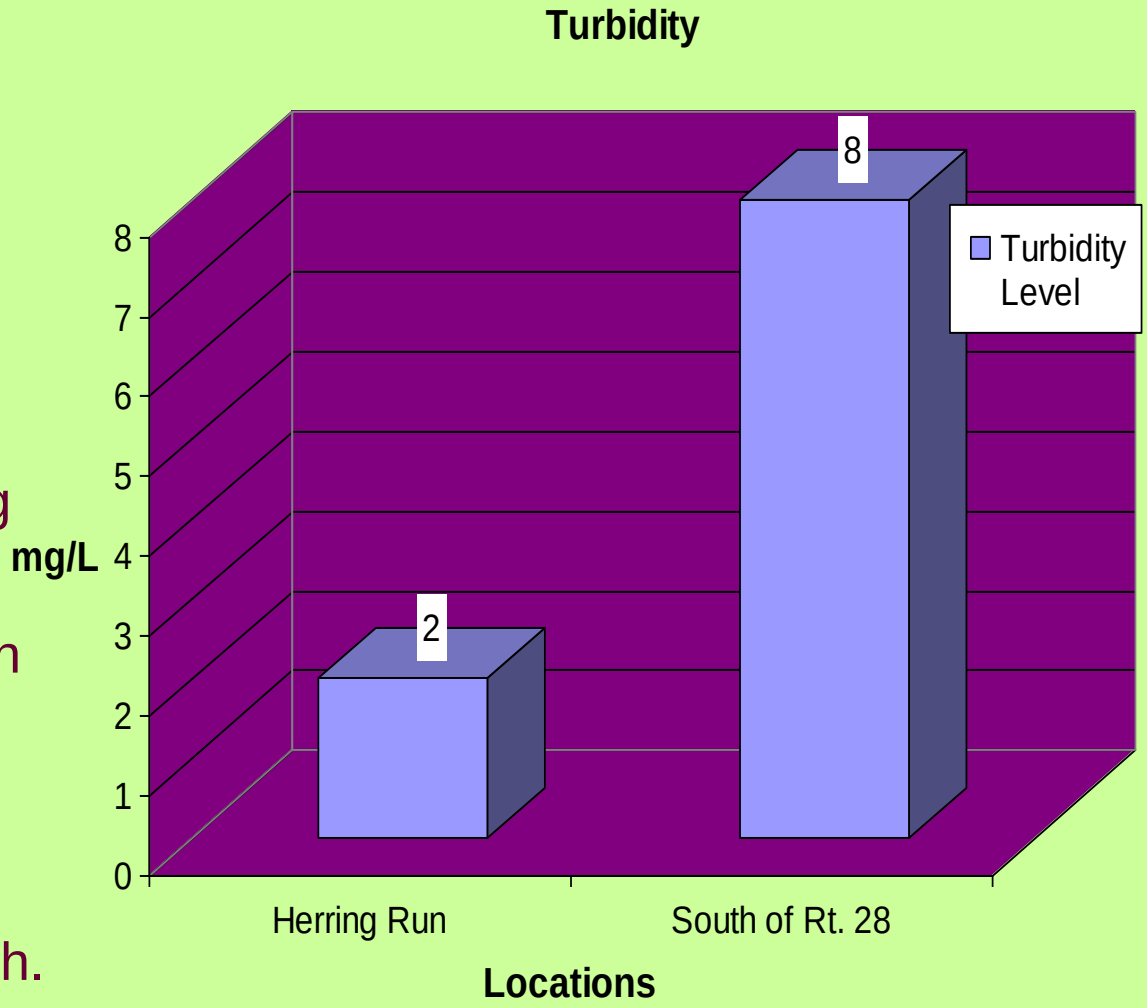
1. Turbidity was higher at the lower site: South of Rt. 28
2. Dissolved Oxygen was higher at the upper site: Herring Run
3. Temperature was higher at the upper site: Herring Run
4. Nitrates were higher at the lower site: South of Rt. 28

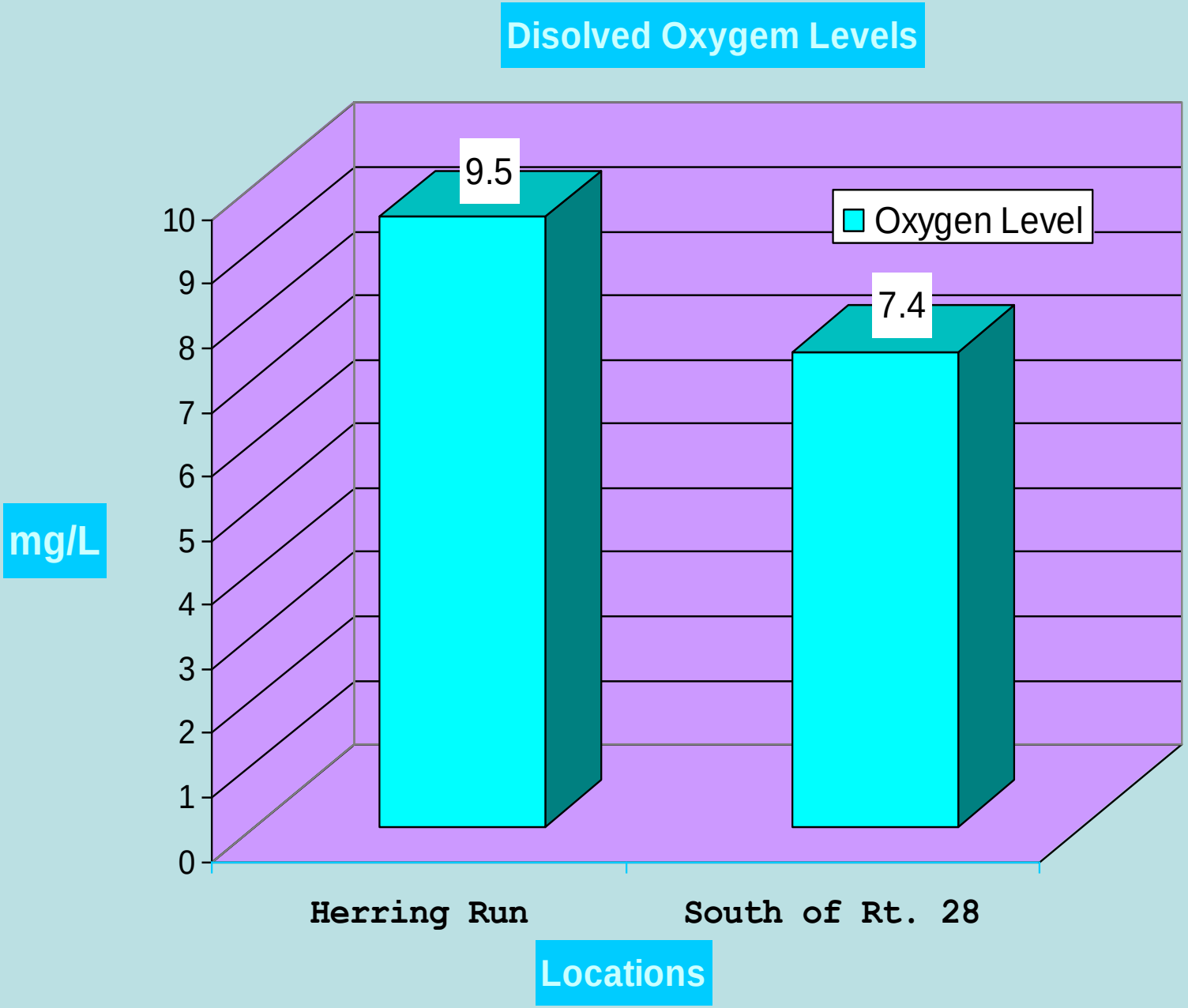
Use of Chemistry Equipment

We wore boots to go into the water and measure the;

- **PH**
- **Turbidity**
- **Dissolved Oxygen**
- **Nitrates**
- **Temperature**

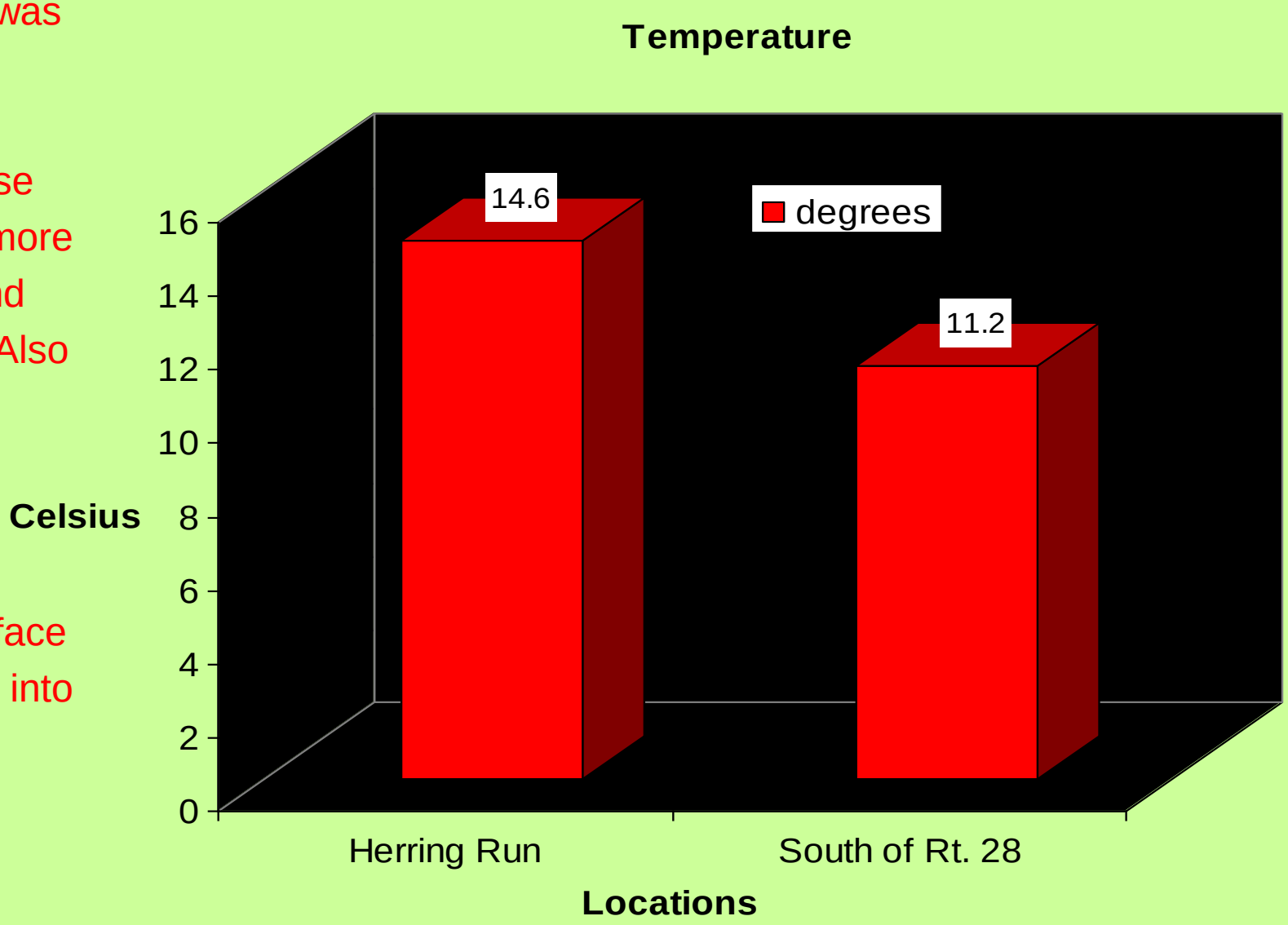
The Herring Run was clearer, possibly because there was less floating algae. The reduced algae could have been associated with lower nitrate levels which is a nutrient that stimulates plant growth.

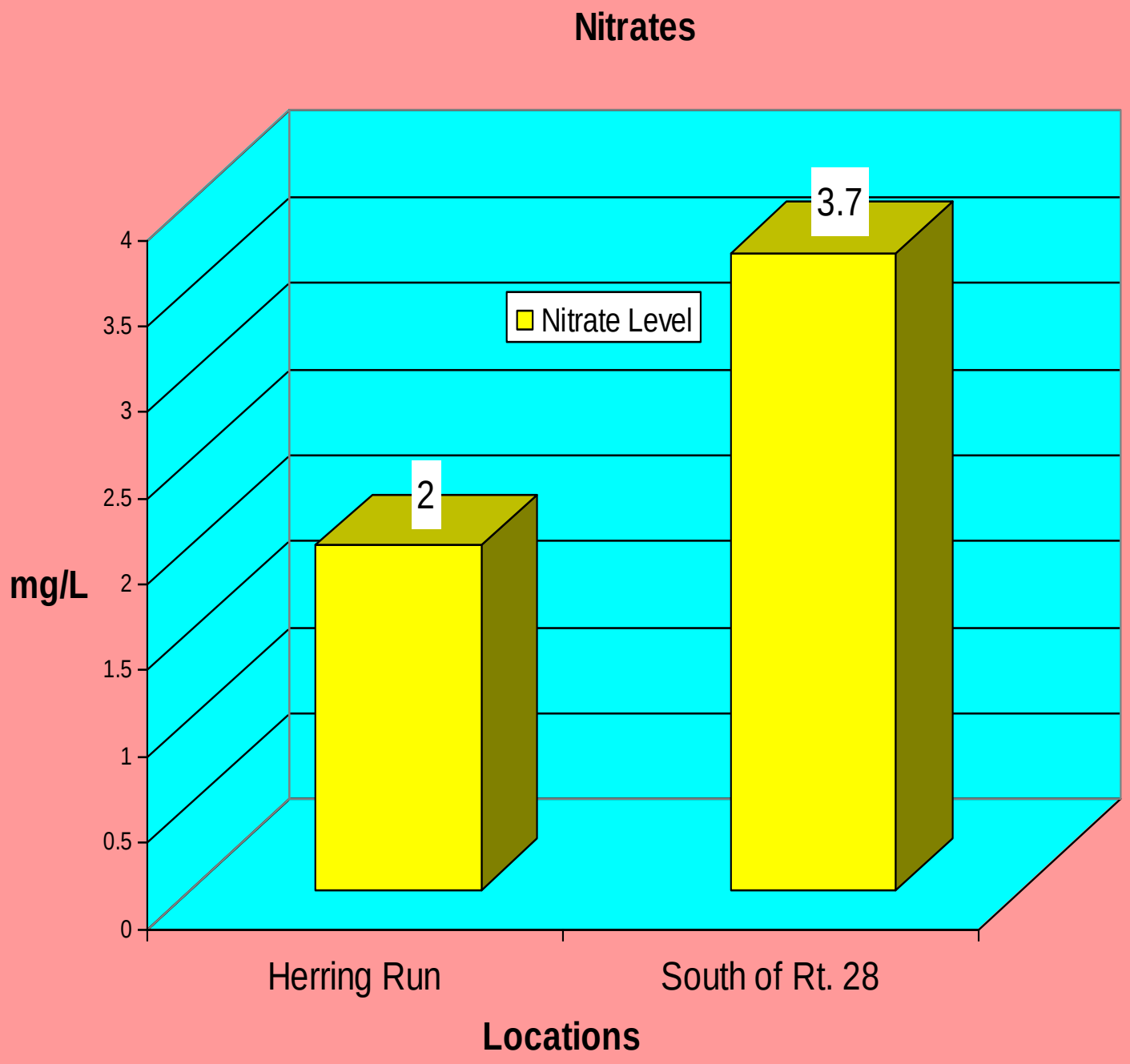




Possibly it was higher at the Herring Run because of the fish ladder. Water was tumbling down the concrete ladder. Another possibility is that rooted plants were producing more oxygen in the water at the open Herring Run site.

Possibly It was Warmer at the Herring Run because there was more sunlight, and less trees. Also the Herring Run is very close to a large lake whose surface water flows into the river.





Nitrates may be higher further down the river due to contributions from runoff and/or septic systems. Another possibility is that rooted plants were producing more oxygen in the water at the open Herring Run site.

In addition to water chemistry we looked at macroinvertabrates

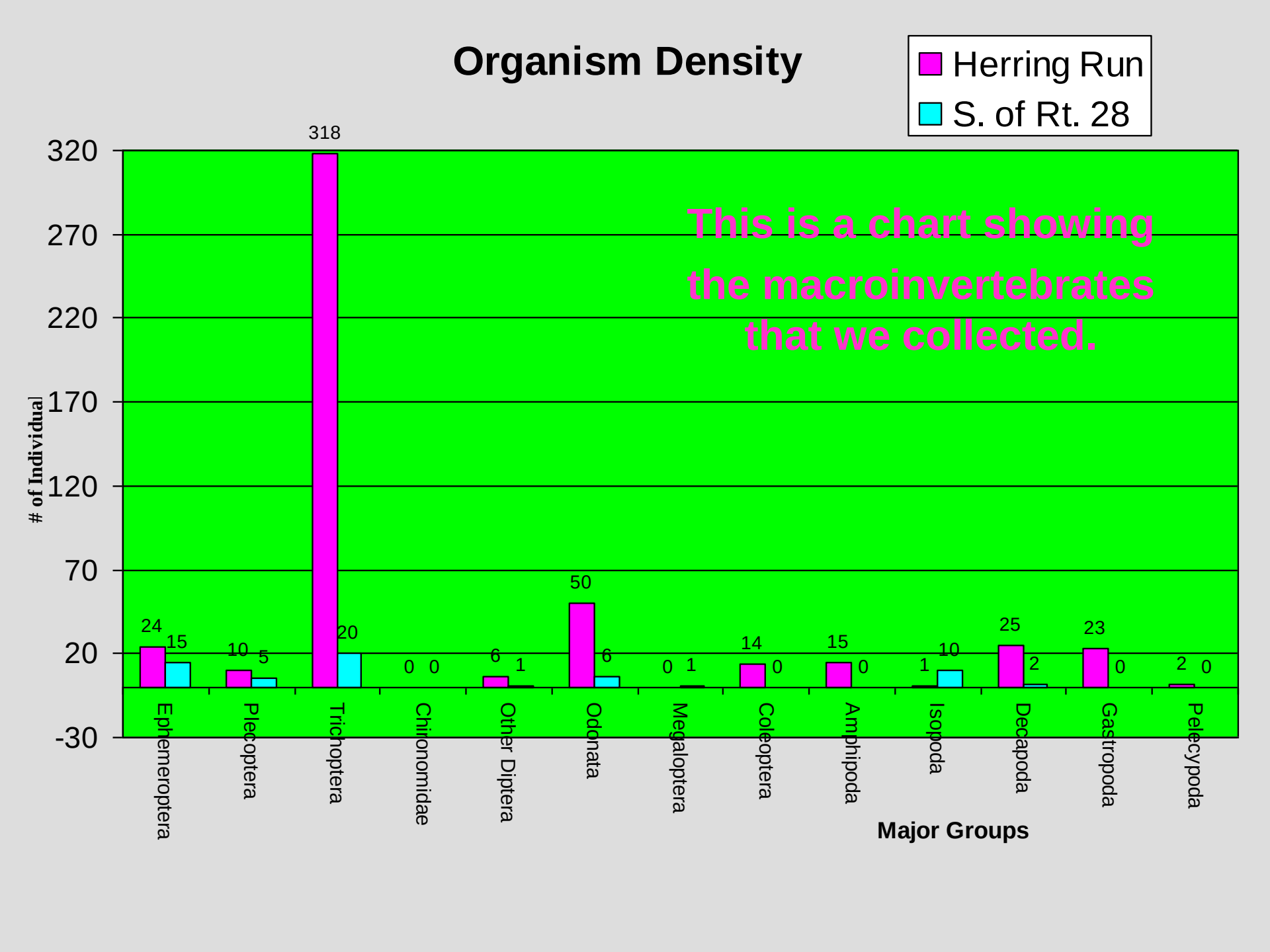
Use of Macroinvertebrate Sampling

We examined the macroinvertebrates that we collected, in class. We put them into the groups that they belonged to. The bugs not only tell us what lives in the water, but also something about the water quality.

Lab Analysis Equipment

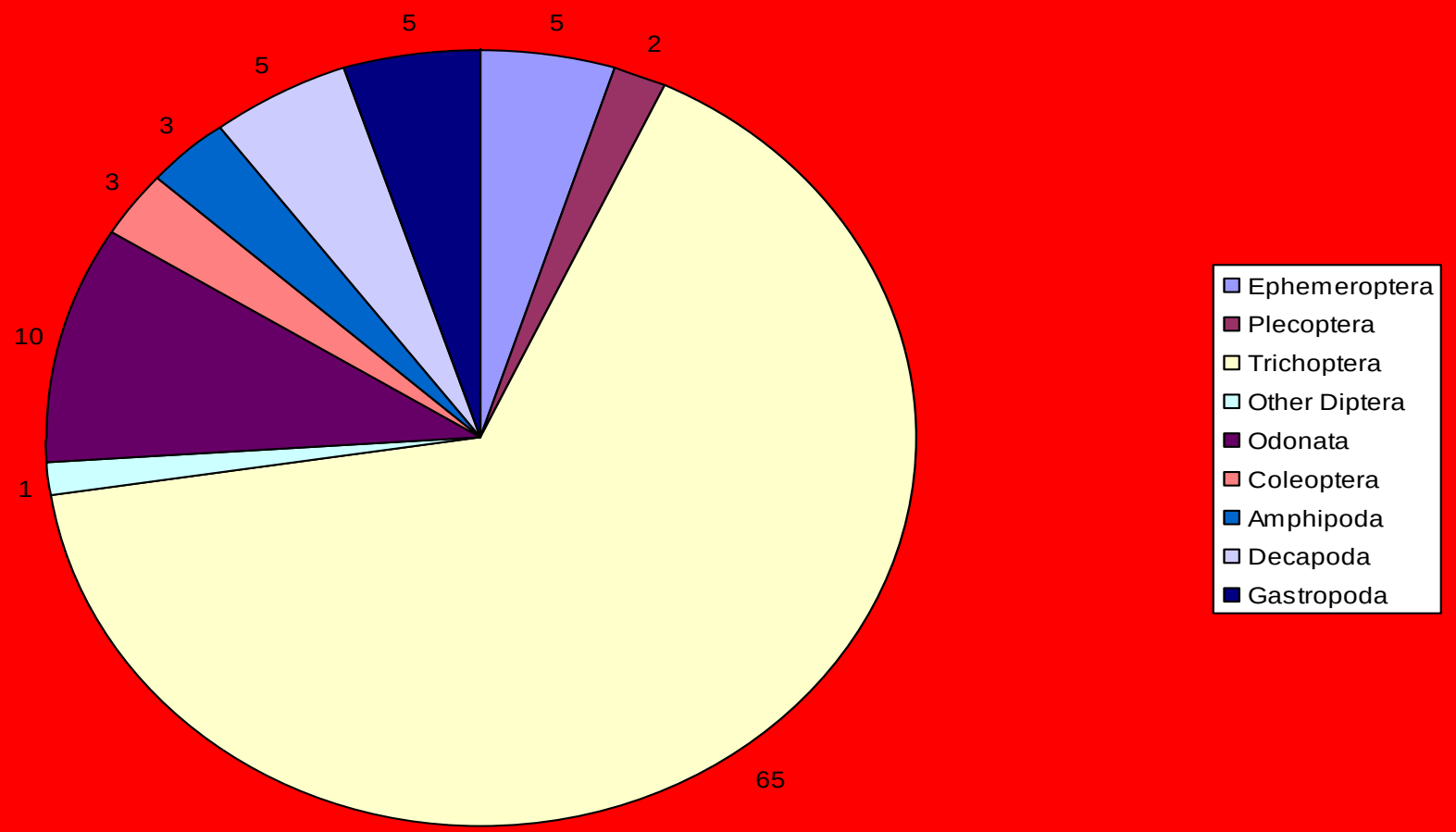
We preserved the macroinvertebrates by keeping them in alcohol. Then we picked them out with tweezers and pipettes. We then, examined them through microscopes.

- Materials
- Tweezers
- Pipettes
- Microscopes
- Sample trays
- Alcohol


Organism Density
Herring Run
S. of Rt. 28
This is a chart showing the macroinvertebrates that we collected.
# of Individual
320
270
220
170
120
70
20
-30
24
15
10
5
318
20
0
0
6
1
50
6
0
1
14
0
15
0
1
10
25
2
23
0
2
0
Ephemeroptera
Plecoptera
Trichoptera
Chironomidae
Other Diptera
Odonata
Megaloptera
Coleoptera
Amphipoda
Isopoda
Decapoda
Gastropoda
Pelecypoda
Major Groups

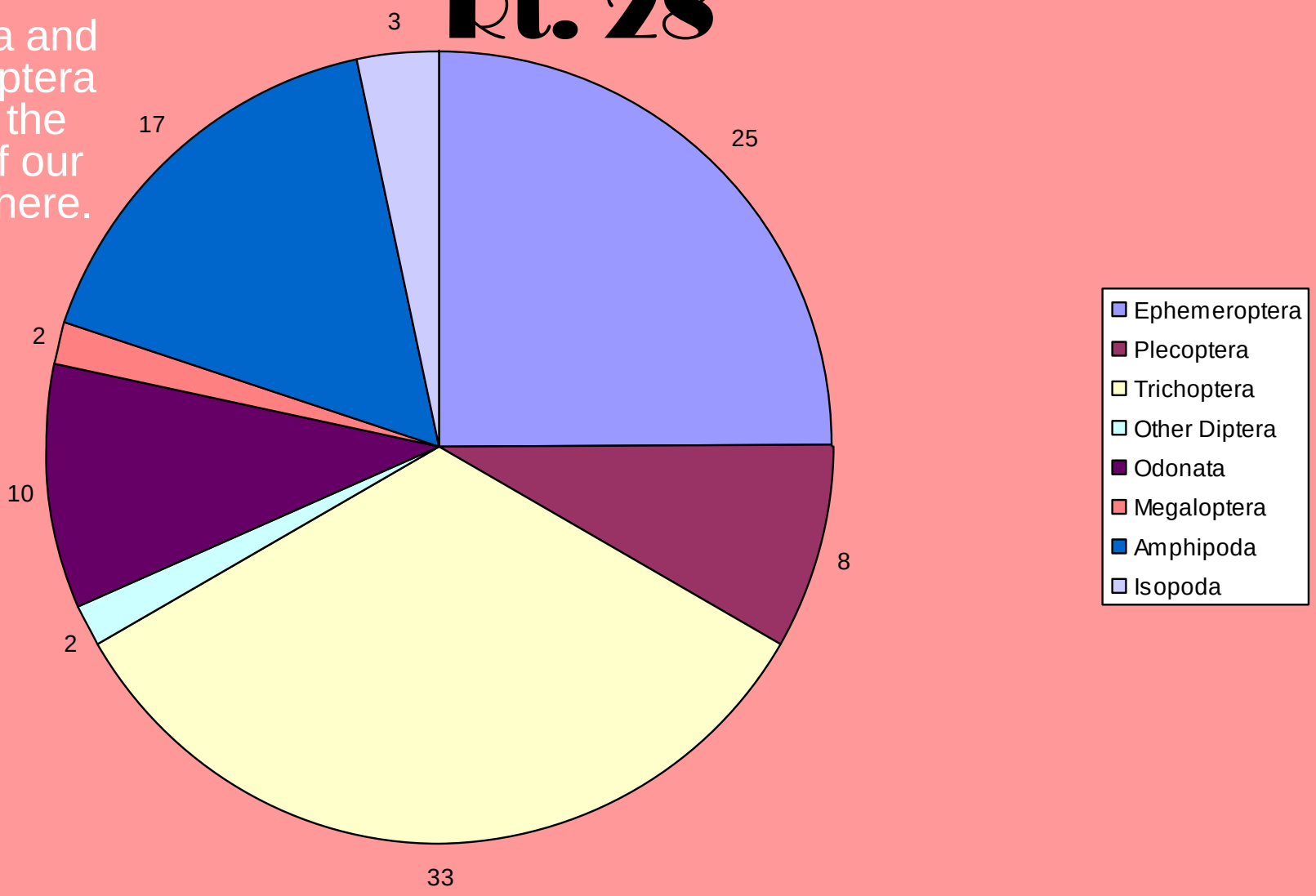
Percent Composition at Herring Run

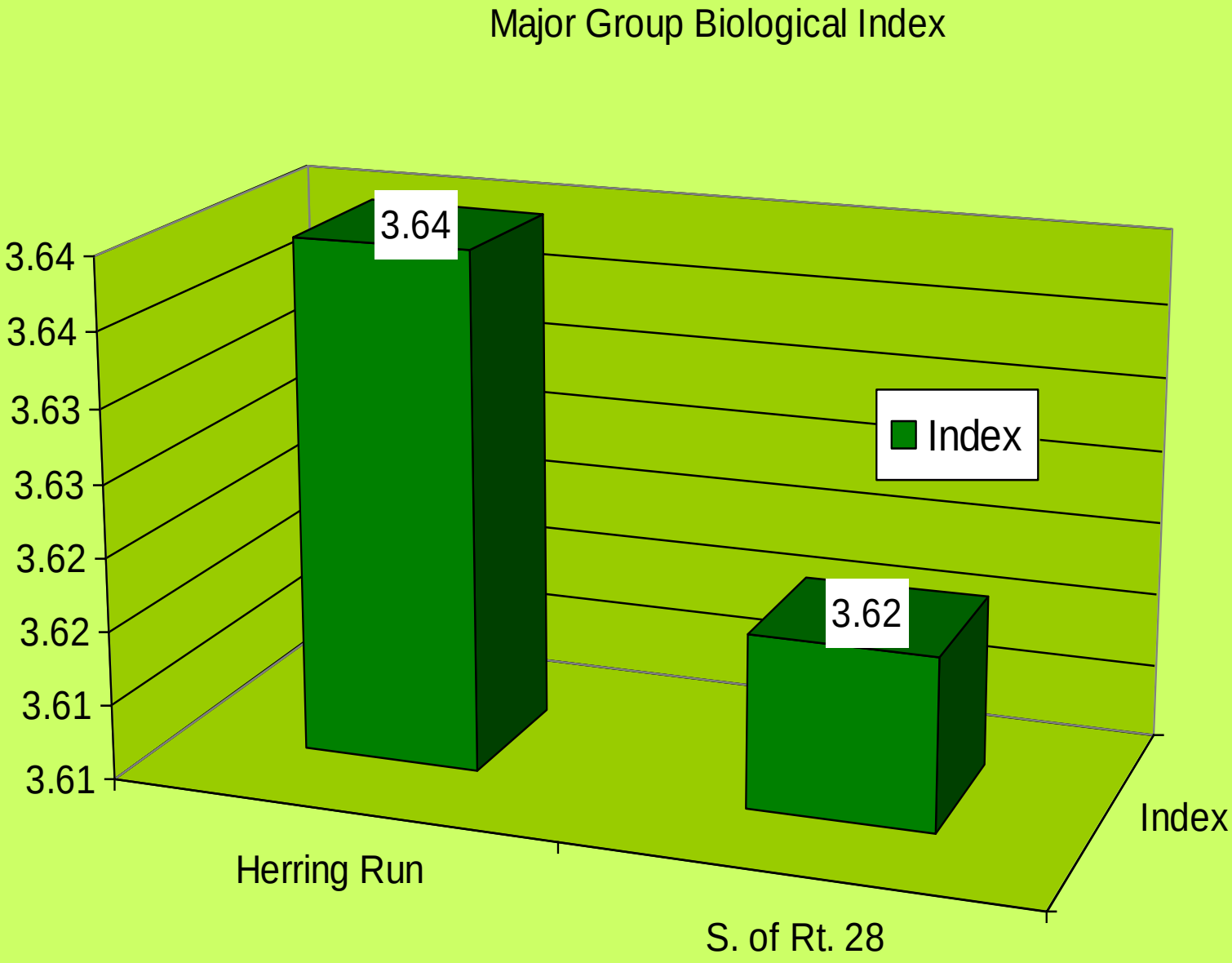
The Trichoptera made up the majority of our collection here,but we also found quite a few Odonata as well as other interesting organisms.



Percent Composition of Rt. 28

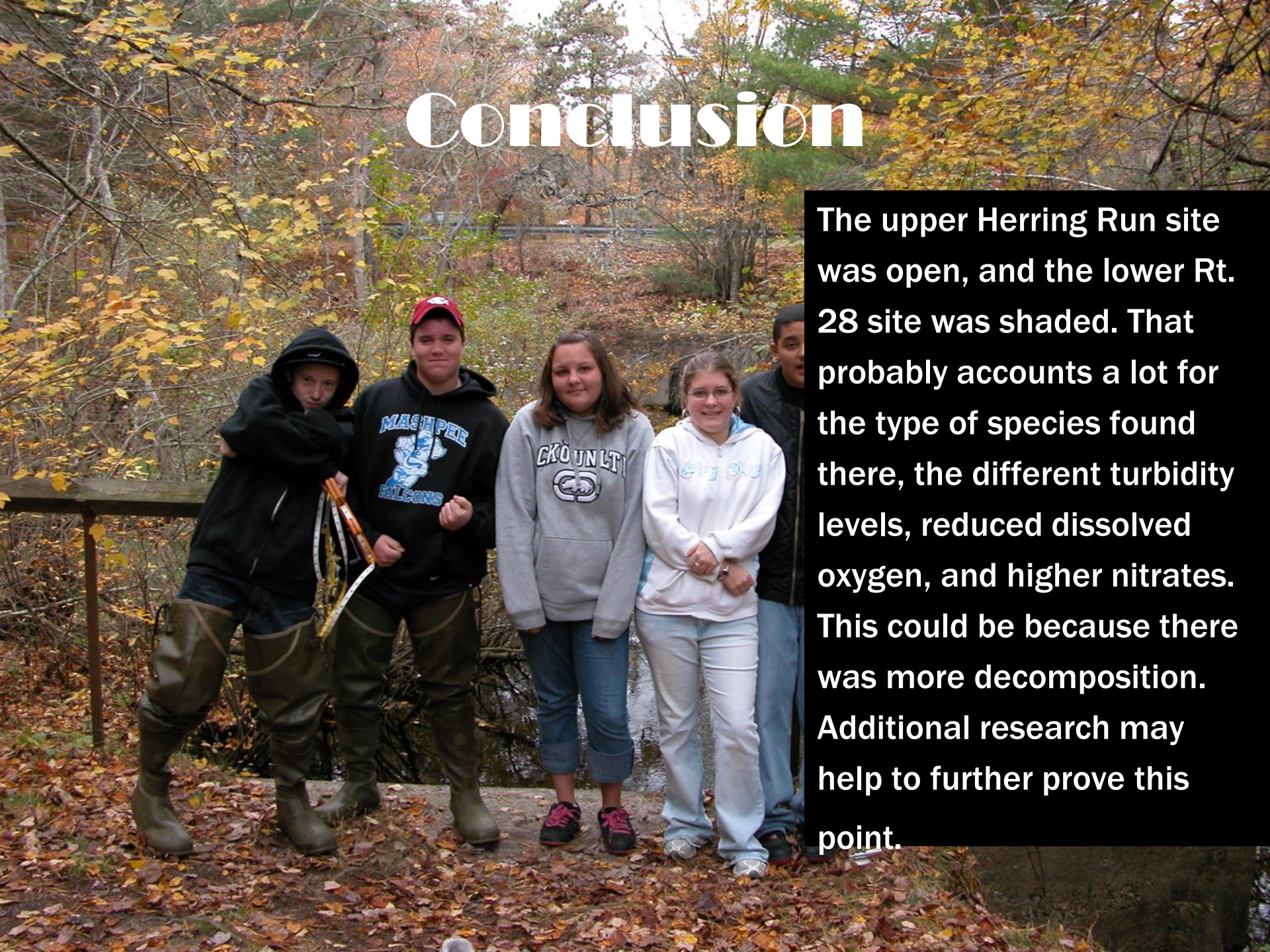
Trichoptera and Ephemeroptera made up the majority of our collection here.





The two were very close. The upper site did have more pollution tolerant species. This may account for the differences

Conclusion



The upper Herring Run site was open, and the lower Rt. 28 site was shaded. That probably accounts a lot for the type of species found there, the different turbidity levels, reduced dissolved oxygen, and higher nitrates. This could be because there was more decomposition. Additional research may help to further prove this point.

Additional Questions

Would we end up with better data if we:

- **Sampled more sites**
- **Studied longer hours**